

# RAFT on piles for Friends Arena, Sweden's new national football stadium

## Project overview >

The Friends Arena is Sweden's national stadium and it replaces the old Råsunda. Initial plans aimed to rebuild Råsunda Fotbollstadion into a modern stadium proved not to be viable and instead, a brand new national stadium was built. Construction of the new stadium began in May 2009, and the Friends Arena officially opened on 27 October 2012 with a concert night of Swedish artists.

## ArcelorMittal Fibres solution >

- TAB®Raft on piles

**Location:** Solna, Sweden

**Owner:** Svenska Fotbollförbundet and Fabege

**Operator:** AEG, Anschutz Entertainment Group

**Architects:** Krook & Tjäder, Berg Arkitektkontor and British Populous

**Main Contractor:** Peab AB

**Concrete supplier:** Swerock AB

**ArcelorMittal fibres used:** 750 tonnes of HE+ 1/60

**Dosage:** 45kg to 50kg/m<sup>3</sup>

**Total Raft on piles area:** 26,000m<sup>2</sup>

**Total project cost:** €250m

“With the ArcelorMittal Fibres solution we achieved 35% time/cost savings in the construction of the Raft on piles, when compared to traditional rebar solution.”

Lars-Olof Persson  
Area Manager Grus & Betong  
Swerock AB

## The challenge >

Early in 2000, the Swedish Football Association took the very welcome decision to replace the 80 year old Råsunda Football stadium. The Råsunda football stadium, Sweden's beloved national stadium in Solna, first opened in 1937. It was showing signs of age and it did not meet international safety and capacity standards. Plans to build a new

arena on unused land in Råsta, close to Solna's railway station, unfolded and the initial concept then expanded to include the construction of a new district which is now known as Arenastaden, complete with a hotel, shopping centre, residential areas and offices.

Initially called the Swedbank Arena, the name of the arena changed to

Friends Arena in March 2012, when the Swedbank donated the name to the Swedish anti-bullying organisation to help promote its efforts in creating a socially sustainable society focused on young people.

The construction of Friends Area started in May 2009.

### Official opening of Friends Arena.

The official opening of Friends Arena on 27 October 2012 was attended by Sweden's King Carl XVI Gustaf, Queen Silvia and 50,000 spectators.

The first football match was played at Friends Arena on 14 November 2012 between Sweden and England with a Swedish 4-2 triumph and Zlatan Ibrahimovic scoring all 4 of Sweden's goals. Friends Arena is the home ground for AIK Football.



## The solution >

The Friends Arena is built on unused land in Solna close to Råstasjön lake. The poor ground conditions meant that the entire construction had to be built on thousands of concrete piles driven up to 36 metres deep. Throughout the construction, it was necessary to have a flexible job site due to variations in concrete pouring requirements which ranged from 100m<sup>2</sup> to 1000m<sup>2</sup> on any given day. With the ArcelorMittal Fibres solution, this level of flexibility was possible due to the elimination of the time-consuming installation of a traditional rebar sub-structure.

The Raft on piles is designed with steel fibre reinforced concrete as a free bearing structure that is supported by piles. The pile grid varies from 3.0m x 3.0m up to 7.2m x 7.2m distance and the slab thickness varies from 300mm to 350mm. The design is calculated on loads from 10 kN/m<sup>2</sup> up to 600 kN point load. The concrete was reinforced with 45kg/m<sup>3</sup> to 50kg/m<sup>3</sup> of ArcelorMittal PREMIUM grade HE+ 1/60 fibre.



## The result >

Today Stockholm enjoys a world-class arena that attracts visitors from all over the world. Friends Arena, hosts all year round concerts, sports events and shows, no matter the weather, thanks to its retractable roof feature. Now, Sweden has a national arena that can host football matches on grass, even during the winter and it is able to host major artists and performances with complex concert production requirements. Friends Arena is designed for events of all sizes and has a maximum capacity of 75,000 people accommodating 50,000 seated fans for football matches.

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